

REMARKS

Entry of the foregoing amendments and reconsideration of the above identified application are respectfully requested in view of the following remarks.

I. Claim Status:

The present application was originally filed on December 10, 2003 including claims 1 through 5. Claims 1-3 and 5 were still pending in the present application prior to this response. Claims 1 and 2 are independent.

By this amendment, Applicants have amended independent claims 1 and 2. No new matter has been introduced.

II. Response to Rejections under 35 U.S.C. §103:

In the Office Action, all of the pending claims have been rejected under 35 U.S.C. §103(a). Claims 1- 3 have been rejected as being unpatentable over background teachings of U.S. Patent No. 5,995,144 to Sasakura (hereafter “Sasakura”) in view of Examiner’s Official Notice (hereafter “Official Notice”).

Claim 5 has been rejected as being unpatentable over Sasakura as modified by Official Notice and further in view of U.S. 2002/0101531 to Kaneda (hereafter “Kaneda”). Claim 5 has been further rejected as being unpatentable over Sasakura as modified by Official Notice and further in view of U.S. Patent No. 5,349,409 to Kawasaki *et al.* (hereafter “Kawasaki”).

Applicants traverse each and every rejection to the extent that such rejections may be applicable to the claims. With this response, Applicants have amended independent claims 1 and 2 to further clarify the claimed invention. More specifically, claims 1 and 2 now more specifically recite the structure of a microlens formed on each pair of the photoelectric conversion elements. Support for the amendments to claims 1 and 2 may be found at least in page 12—line 3 through page 13—line 16 and page 23—line 13 through page 24—line 5 and FIGS. 2 and 6B of the application, as originally filed.

Applicants respectfully assert that these actions have been undertaken solely to expedite prosecution and advance this application towards allowance. Therefore, it is respectfully submitted that any and all claim amendments submitted herein are without prejudice or disclaimer. That is, any amendments to the claims or statements made, should not be taken as an indication or admission that the cited references anticipate or suggest the claimed invention.

The Examiner continues to rely upon Sasakura's background of the invention including FIGs 1-4 and corresponding text on columns 1-3. Applicants again assert that the present invention, as claimed, is distinguishable from the "Background" disclosure of the Sasakura reference. For example, Sasakura discloses at column 2, lines 53-57:

55 In the above-described case, to maximize the amount of
data required to calculate the amounts of correlation, the
following sequence has conventionally been executed. First,
the number of pixels to be handled in the calculation of the
amounts of correlation is increased with the amount of
shifting being decreased, and a calculation is performed
under these conditions. If the above-described amount of
60 deviation is not obtained in such a first calculation of the
amounts of correlation, it is determined that the optical
system is in a large-defocus state, and a second calculation
of the amounts of correlation is performed. In the second
calculation, the number of pixels to be handled in the
65 calculation of the amounts of correlation is decreased with
the amount of shifting being increased, and the amount of
deviation is detected.

The Examiner construes the number of AF pixels in Sasakura as equivalent to "a width of the focus detection opening pupil" (e.g., T in FIG. 10 of the present application), and the shift amount of the image in Sasakura as equivalent to "a shift amount of a focus detection opening pupil" (e.g., t in FIG. 10 of Applicants' disclosure). However, Sasakura does not disclose or suggest that shading correction is performed on the basis of the shift amount (e.g., t) and the width of the focus detection opening pupil (e.g., T), as claimed. Moreover, the Examiner expressly concedes that "Sasakura fails to teach that the first and second image signals are each shading-corrected image signals." (Page 3 in the Office Action).

The Examiner has taken Official Notice asserting that "it is old and well known in the art to have shading-corrected image signals used in a focus detection device." Applicants respectfully note that Official Notice unsupported by documentary evidence should only be taken where the facts asserted to be well-known, or to be common knowledge in the art, are capable of instant and unquestionable demonstration as being well-known. See MPEP 2144.03 (A).

Accordingly, should the Examiner continue to take Official Notice of this limitation, Applicants respectfully request that the Examiner provide an art reference to support the Official Notice assertion.

In addition, the correlation in the Sasakura reference is based on a distribution of voltages generated in two linear arrays of pixel photoelectric conversion elements. In contrast, the present invention requires determining a focus correlation value based on the computed ratio between a shift amount of a focus detection opening pupil from an optical axis, caused by being limited by an exit window of the photographing optical system, and a width of the focus detection opening pupil, as claimed. Further, the meaning of the word “shift” in the present invention, as claimed, is entirely different from the meaning of the word shift in Sasakura. Sasakura provides that “the amount of correlation, “ V_1 ”, between data obtaining by shifting the image A by one bit of the AF sensor 7 and data indicative of the image B is calculated.” (C2, L8-11). In the present invention, however, “a ratio between a shift amount of a focus detection opening pupil from an optical axis, caused by being limited by an exit window of the photographing optical system axis, and a width of the focus detection opening pupil,” is claimed.

The additional references cited (i.e. Kawasaki and Kaneda) do not cure Sasakura’s deficiencies as discussed above. The Kawasaki and Kaneda references merely teach a detachable photographing lens with a memory. Kawasaki discloses that the lens includes memory for storing steady lens data which is constant regardless of photographing conditions and variable lens data which vary in accordance with photographing conditions (Abstract). The variable lens data includes, for example, the focal length, the object distance, the open F-number, the minimum F-number, and the like (C4,L29-32). Kaneda discloses a lens apparatus comprising a lens microcomputer 410 with a memory portion 506, a control portion 504, and a communications portion 508. In the memory portion 506, characteristic data and effective image circle data which are information showing the optical resolution performance of the shooting lens are stored as well as the map data for performing zoom tracking (¶¶ 0121-0122). Thus, contrary to the Examiner’s assertion, neither Kawasaki nor Kaneda disclose or suggest “that the information utilized to create the shading-corrected image signal is obtained from a digital memory in a photographing lens” (see Office Action, pages 8 and 9).

As a result, Applicants respectfully assert that none of the cited references, or combinations thereof, discloses or suggests the claimed subject matter. Nonetheless, in order to expedite prosecution, Applicants have further amended the independent claims to recite, *inter alia*, “every two photoelectric conversion elements of said first and second photoelectric conversion element arrays include a microlens positioned such that the first light beam passing through the first area of the exit pupil and the second light beam passing through the second area of the exit pupil focuses on a first and a second photoelectric conversion element respectively.” Accordingly, amended claims 1 and 2 are neither disclosed nor suggested by any of the cited references. In view of the foregoing arguments and amendments, Applicants believe that dependent claims 2 and 5 are also distinguishable from the cited references.

In view of the above-stated reasons, Applicants respectfully assert that all of the pending claims in the present application are distinguishable from Sasakura, Kaneda, Kawasaki, and combinations thereof. Accordingly, withdrawal of the rejections and a favorable examination on the merits is respectfully requested.

CONCLUSION

Based on the foregoing amendments and remarks, Applicants respectfully request reconsideration and withdrawal of the rejection of claims and allowance of this application.

AUTHORIZATION

The Commissioner is hereby authorized to charge any additional fees which may be required for consideration of this Amendment to Deposit Account No. **13-4500**, Order No. 1232-5227. A DUPLICATE OF THIS DOCUMENT IS ATTACHED.

In the event that an extension of time is required, or which may be required in addition to that requested in a petition for an extension of time, the Commissioner is requested to grant a petition for that extension of time which is required to make this response timely and is hereby authorized to charge any fee for such an extension of time or credit any overpayment for an extension of time to Deposit Account No. **13-4500**, Order No. 1232-5227. A DUPLICATE OF THIS DOCUMENT IS ATTACHED.

Respectfully submitted,
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Dated: April 10, 2008

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